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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,798	11/24/2003	Akihiro Ochii	36856.1157	3106
54066	7590	03/09/2006	EXAMINER	
MURATA MANUFACTURING COMPANY, LTD. C/O KEATING & BENNETT, LLP 8180 GREENSBORO DRIVE SUITE 850 MCLEAN, VA 22102			HAROON, ADEEL	
			ART UNIT	PAPER NUMBER
			2685	

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/718,798	<b>Applicant(s)</b> OCHII ET AL.	
	<b>Examiner</b> Adeel Haroon	<b>Art Unit</b> 2685	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hagstrom et al. (U.S. 6,185,434).

With respect to claim 1, Hagstrom et al. disclose a multiplexer, element number 51, in figure 5. Hagstrom et al. disclose the multiplexer having three filters, element numbers 51b, 51c, and 51d, that pass a signal in their respective frequency band and attenuate a signal in the other two bands (Column 5, lines 24-43). Hagstrom et al. teach that these filters are lowpass, bandpass, and highpass filters with one of two input/output ports of each filter is connected with a common port, element number 51a (Column 5, lines 24-43).

With respect to claim 14, Hagstrom et al. further disclose the second frequency band, 51c, is a frequency band used in a system dedicated to receiving a signal (Column 5, lines 59-62).

With respect to claim 15, Hagstorm et al. show an inductor connected in series with the common port in figure 7.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-6 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagstrom et al. in view of Smith (U.S. 6,724,278).

With respect to claim 2, the multiplexer of Hagstrom et al. is described above in the discussion of claim 1. Hagstorm et al. further disclose a multilayer substrate in figure 6, wherein at least one element of the first and third filters is disposed on a mounting surface of the substrate and the remaining elements are disposed on an interior layer, element number 60, of the multilayer substrate (Column 6, lines 7-34). Hagstrom et al. do not disclose using a SAW filter. However, Smith discloses a multiplexer, element number 60, which uses three filters to separate three frequency bands in figure 2 thus making it analogous art since it is in the same field of endeavor.

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Smith also teaches using a SAW filter in one of the filters, which is disposed on the mounting surface (Column 2, lines 29-34). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to include a SAW filter as taught by Smith in Hagstrom et al.'s multiplexer in order to provide better isolation.

With respect to claim 3, Hagstorm et al. further disclose a plurality of ceramic layers (Column 6, lines 13-16).

With respect to claim 4, Hagstorm et al. further disclose the multilayer substrate being substantially rectangular in figure 6.

With respect to claim 5, Hagstorm et al. disclose input/output terminals being disposed on the side of the mounting surface of the multilayer substrate in figure 6 (Column 6, lines 26-31). Since a ground terminal is necessary for all electrical parts, there must be a ground terminal in Hagstorm et al.'s multiplexer. Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to include a ground terminal adjacent to the input/output terminals in Hagstorm et al.'s multiplexer to have an accessible ground port.

With respect to claim 6, Hagstorm et al. further discloses that the remaining elements are disposed on one interior layer, element number 60, other than the layer which provides in the input/output terminals in figure 6.

With respect to claim 8, the multiplexer of Hagstrom et al. is described above in the discussion of claim 1. Hagstorm et al. further disclose a multilayer substrate in figure 6, wherein all elements of the first and third filters are disposed on an interior layer, element number 60, of the multilayer substrate (Column 6, lines 7-34). Hagstrom

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et al. do not disclose using a SAW filter. However, Smith discloses a multiplexer, element number 60, which uses three filters to separate three frequency bands in figure 2 thus making it analogous art since it is in the same field of endeavor. Smith also teaches using a SAW filter in one of the filters, which is disposed on the mounting surface (Column 2, lines 29-34). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to include a SAW filter as taught by Smith in Hagstrom et al.'s multiplexer in order to provide better isolation.

With respect to claim 9, Hagstorm et al. further disclose a plurality of ceramic layers (Column 6, lines 13-16).

With respect to claim 10, Hagstorm et al. further disclose the multilayer substrate being substantially rectangular in figure 6.

With respect to claim 11, Hagstorm et al. disclose input/output terminals being disposed on the side of the mounting surface of the multilayer substrate in figure 6 (Column 6, lines 26-31). Since a ground terminal is necessary for all electrical parts, there must be a ground terminal in Hagstorm et al.'s multiplexer. Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to include a ground terminal adjacent to the input/output terminals in Hagstorm et al.'s multiplexer to have an accessible ground port.

With respect to claim 12, Hagstorm et al. further discloses that the remaining elements are disposed on one interior layer, element number 60, other than the layer which provides in the input/output terminals in figure 6.

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5. Claims 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagstrom et al. and Smith further in view of Uchikoba (U.S. 6,628,178).

With respect to claim 7, the modified multiplexer of Hagstorm et al. and Smith is described above in the discussion of claims 1 and 2. Neither reference discloses a coil. However, Uchikoba discloses using SAW filters as part of a radio frequency module thus making it analogous art since it is in the same field of endeavor. Uchikoba further teaches using a coil in a multilayer substrate where other elements are not disposed near the coil (Column 1, lines 34-39). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Uchikoba's coil using technique in the modified multiplexer in order to ensure no interference in between the parts of the multiplexer.

With respect to claim 13, the modified multiplexer of Hagstorm et al. and Smith is described above in the discussion of claims 1 and 8. Neither reference discloses a coil. However, Uchikoba discloses using SAW filters as part of a radio frequency module thus making it analogous art since it is in the same field of endeavor. Uchikoba further teaches using a coil in a multilayer substrate where other elements are not disposed near the coil (Column 1, lines 34-39). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Uchikoba's coil using technique in the modified multiplexer in order to ensure no interference in between the parts of the multiplexer.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hagstrom et al.

With respect to claim 16, Hagstrom et al. discloses the passband of 1900 MHz for the third filter and the passband of 800 MHz for the first filter (Column 5, lines 39-43) where the attenuation poles of the filters are close to the passband of the other filters in figures 8-10. Hagstrom et al. does not specifically disclose the 1500 MHz band. However, 1500 MHz band is extremely well known in the art since it is the GPS frequency band. Therefore, it would be obvious to one of ordinary skill in the art to include 1500 MHz band in the Hagstrom's multiplexer in order to incorporate GPS frequency band.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Thomsen et al. (U.S. 6,584,304) discloses a multiplexer with three bands. Watanabe et al. (U.S. 6,633,748) disclose a high frequency component for distributing receiving paths in different frequency bands.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adeel Haroon whose telephone number is (571) 272-7405. The examiner can normally be reached on Monday thru Friday, 8:30 a.m. - 5:00 p.m..



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AH  
3/1/06

*Nguyen Vo*  
3/6/2006

**NGUYEN T. VO**  
**PRIMARY EXAMINER**